



Assessment of road transport infrastructure in Lagos state, Nigeria

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General Note

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ABSTRACT

Adequate and efficient road transport infrastructure serves as the pillar for social and economic growth of any nation, the objective of this study is to identify the various road transport infrastructural deficit along kola to Ikeja in Lagos state. Using survey research method, data from road users and road workers who subsist along the road corridor were collected with the help of questionnaire and physical observation of selected road transport infrastructure. Descriptive statistics was deployed to analyses the data. This study identified the following infrastructure in the study corridor; kerbs, pavement, drainage, traffic light, street light, road signs, road marking, overhead bridge, pedestrian bridge, walkway and also revealed that the road infrastructure in the location is not adequate and are in very bad conditions. The study found out that the challenges facing road infrastructure development in Lagos state are Inadequate parking space, Traffic Congestion, Environmental pollution, poorly maintained roads, Flooding and Accident with Relative Importance Index (RII) of 0.3625,0.3725,0.3875,0.4025,0.4050 and 0.4350 respectively.The study recommends that attention should be paid to provide adequate road transport infrastructure as this could lead to the reduction of many negative environmental externalities of road transportation in the study location.

Keyword: Road, Transport, Infrastructure, Inadequate.

1. INTRODUCTION

Background to the study

The way the earth is evenly circulated with resources indicates that the earth is filled with different resources that can be exploited by humans. Transport provides the means by which these resources can be moved by the agent of demand and supply to the point of goods and services (Ogbuozobe, 1997). Road transport is a very important part of the entire transportation sector in Nigeria. It is the most used mode of transportation for people, goods, and services from the point of origin to the preferred destination in Nigeria. The road transportation system in Nigeria is as old as creation itself. During the 1900s under the British colonial rule, the road were built so that movement of materials from the rural areas where they are produced to the urban region where they are harnessed for transportation to industries abroad (Sheriff, 2009). However, during the changing economic climates after independence in 1960 saw the importance for the expansion of road with the main reason of providing access to the urban areas and large cities (Encyclopedia of nations, 2008).

However, Transport can be viewed as a phenomenon which makes goods and services to be relevant and valuable, which implies these means they cannot be cut off without a partial or total effect on the economy of any nation, which could lead to collapse (Bos, 2003). Transport industries exist to provide for the movement of people and goods and for the provision and distribution of resources and transport thereby fulfils the basic need of the society as it aids the economy (Brain & Richard, 2000). However, how effective a transport system will be depends on its overall infrastructure and facilities (Ocholi, 2013). It is important to define infrastructure more closely so as to differentiate the use of the term in this context. According to (Juma, 2006), the term infrastructure may be defined as amenities, structures, associated equipment, that necessitate the flow of products and their associated services between individuals, firms and governments. The provision of road infrastructure has been the responsibility of governments either at the national or state level. Road construction and maintenance is funded by the government using funds from taxes. Most governments also have adopted the system of giving the construction work to private concessionaires who build the roads and recover the funds used in building those roads through a tolling system. They operate and run the toll for a specific number of years in which they recover the money they had initially invested to build the road (Austin, 2007).

Ogwude (2016) gave a definition for transport infrastructure as the overhead bridges, pedestrian footbridges, lay-bys, bus-stops, motor-parks and other facilities that ensure traffic flow and bus operations. Nigeria has the approximately the biggest road network in the whole of West Africa and the second largest south of the Sahara with 200,000 km of surfaced roads. (Filani, 1999), Presently the road system is about 208,200 km with 28,980 km paved and 179,220 km unpaved (Federal Ministry of Works, 2013). The total road network in Nigeria comprises of slightly above 32,000km and it connects across the entire country: the Lagos ring road, the third mainland axial bridge, 30,500km of state roads; and 130,000km of local roads (Buhari, 2000). A well-created transportation foundation gives sufficient access to nearby networks, which thus is an essential condition for the productive activity of assembling, retail, work and lodging market (Olubemehin, 2012). This must be accomplished if the Road Infrastructure is on favourable terms to help development of individuals, products and enterprises.

According to Subhadip, Satish, & Indrajit (2017), every vehicle at one point or the other will require space to park either at beginning or the end of the journey while over the last few decades the demand for space to park has been on an alarming increase due to the increase in the amount of vehicle traffic. A study carried out by Appanagari, (2017) shows that the problem of environmental pollution, are intricate, as there are interconnected issues associated to its connection with road. Road traffic accidents occurs as a result of collision between vehicles, pedestrian, animal, road debris, or other stationary obstruction, such as a tree or utility pole (Wikipedia, 2013). Traffic congestion has been a serious challenge in Nigeria in recent years which has devised different measures adopted by the government to tackle this challenge. The times for movement between different times Journey times from one point to another within towns have remained unreliable and residents have continued to face disturbing inconveniences in transportation (Ukpata & Etika, 2012). Road maintenance is very key in keeping the standard of the roads and ensuring that they do not fall below standards to make it usable for motorists and pedestrians and to keep the roads free and safe from accidents. Unfortunately, maintenance has become something that has been forgone and neglected resulting in quick decline of pavement surface and complete disaster from both vehicle impacts and weather changes. It however, has been almost impossible to build and use a road that requires no maintenance (U. S. Environmental Protection Agency, 2007).

Consequently, this study intends to assess road transport infrastructures in Lagos State, Nigeria with specific interest in some selected highway as a case study. Which will include the state, functionality, challenges and effect of such road transport

infrastructures such as; roads, kerbs, pavements culverts, camber (cross slope), drainage system, street lights, traffic lights, road signs, road marking, zebra crossing, round about (intersections), bridges, overhead bridge and pedestrian bridges. Some of the challenges facing overall transport infrastructure development in Lagos range from traffic, flooding, inadequate parking space, poorly maintained roads, environmental pollution and accidents.

Statement of research problem

Issues influencing the transportation sector in most developing countries begin from insufficient and low quality of infrastructure, increased rate of accidents and difficulty in balance between demand and supply. By General standards and measures, the road network in Nigerian cities may be said to be low and insufficient with the exclusion of FCT, which is a new city with modern roads and facilities. Infrastructural inadequacy and decay, regardless of whether of transportation or some other segment of the social overhead, has accepted a renowned angle in Nigeria. Edame, Fonta, Edet, & Henshaw, (2011) believes that the policies set up by government that led to the decadence of infrastructure and low level of development of industrialization. The problem of traffic congestion in Nigerian cities has its foundation in the uncultured planning pattern of roads especially in the major parts of the cities with uneven land-use distribution. This has led to all sort which include illegal and uncivilised road side parking which have become the norms in cities in Nigeria Federal roads in Lagos state have been tormented by a significant number of road infrastructure inadequacies with major ones being faulty designs, insufficient drainage system, and poor maintenance culture, which have altogether diminished the capacity of the roads to perform its function, there are potholes, washing away of pavements, cracked bridges, old age among others.

This issue has thwarted different areas of the economy, for example, health care, commercial, industrial and educational facilities and have made it difficult, costly and all the more dreadful to move individuals, products and services from point of origin to that of destination and farm produce from rural to urban centres, which frequently lead to loss of man hour and significant expense of goods and services. It is against this background that this study assesses road transport infrastructures in Lagos state, Nigeria. This aim was achieved through the following objectives which are to, identify the various road transport infrastructure in the study area, and examine the condition of road transport infrastructure in the study area and to examine the challenges of road infrastructure development in Lagos state.

2. STUDY AREA AND RESEARCH METHODOLOGY

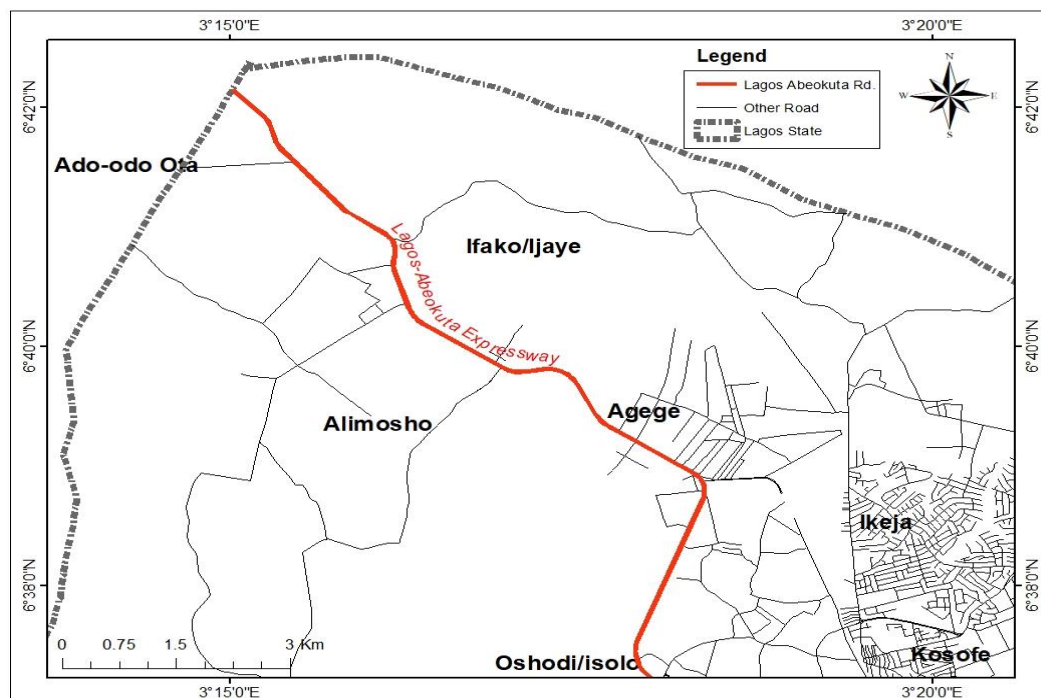


Figure 1 Map showing the study area (Source: Authors fieldwork, 2019.)

The study road corridor is the Lagos-Abeokuta expressway- Agege motorway, the length of the road spans 33km long which is an A5 road and the road corridor stretches across five local government areas of Alimosho, Agege, Ifako-ijaiye, Ikeja, and Oshodi. The

road stretched between Sango overhead bridges to intersect with Agege motor road to Oshodi overhead bridge. Lagos – Abeokuta highway is one of the major arterial roads in Lagos State that periodically have assisted in the improvement of the socio-economic scenery of Lagos State. This road not only provides high-capacity urban travel, but has also been an access to subsisting towns and settlements in the Sango axis (figure 1).

This describes the framework that was used in attaining the stated aim and objectives of the study. This research was primarily designed to study road infrastructures along Lagos-Abeokuta expressway (Agege motorway), Lagos, Nigeria. The appropriate type of research method that was employed in the study is the survey research method which was used to address the various issues raised in the study. These were done through the use of a well structured questionnaire, and an in-depth interview from users and operators (drivers) within the study location.

Population, sampling frame and size for the study

Research population refers to the totality of elements, subjects or people that comprise the whole research project. The population for this research work comprises the generality of road users plying Lagos-Abeokuta expressway. But it was narrowed down to the totality of commuters and drivers that frequently travel along the axis of the study area. The questionnaire was designed for the aforementioned categories of the Lagos-Abeokuta expressway users. This was used as the working universe or study population for the research study.

The sampling frame is a complete list of all the members of the population that was sampled. The sampling frame for this research includes: the users of Lagos-Abeokuta expressway i.e the operators (drivers) and commuters that ply Lagos-Abeokuta expressway. The sample is adequate and represents a reasonable confidence level, since the selected sample size is above the 392 obtained by using Yaro Tamane (1967) formula in the determination of the respondents' views of transport facilities in the selected area along Lagos-Abeokuta expressway (table 1).

Table 1 Showing the Sample Frame and percentage to be sampled (sample size)

S/n	LGA	Population	Sample Size
1	Agege	459,939	671
2	Alimosho	1,277,714	1920
3	Ifako-ijaiye	427,878	643
4	Ikeja	313,196	472
	Total	2,478,727	3706

Source: Authors fieldwork, 2019.

The corresponding will represent the total population of people passing through Lagos-Abeokuta expressway. This is necessitated by the fact that it will be impossible to administer questionnaire to the large number of road user. From the above calculation, it can be concluded that a total number of 3706 questionnaires was distributed and analysed for this research work.

Data collection instrument

This involves data gathering or collection from specific sources in order to have full knowledge of the situation surrounding the research and make generalization about the study. The methodology of this study involves the collection of data from both primary and secondary sources. The main instrument that was used to collect primary data for this study is through personal observation (field survey) and questionnaires. The questionnaire, which comprises of three major sections. The section examined the specific objective with a view to seeking information for the purpose of this research work.

Method of data analysis

Descriptive statistics technique such as percentages, frequencies and means was used to highlight the socio-economic characteristics of the respondents in the study area. The analysis involve expression of data in percentages. It is a single variable analysis which describes the necessary features of the sets of data. The relative importance index was used to rank the challenges facing infrastructure development by using Likert scale.

The Relative importance index is calculated from the below formula:

$$RII = \text{Summation } W / (A * N)$$

Where w = the weight attached to the respondents, scales in the order of 1 to 5

A = the greatest weight = 5

N = numbers of all respondents.

3. DATA EXPLORATION AND PERFORMANCE

Introduction

Data collected from the field were analysed and discussed in this chapter in a manner that aims to combine relevance to the enquiry and also make a reasonable finding from the result. The importance of analysing raw data cannot be relegated to the background. For this study, certain questions were asked to create a logical basis on which reasonable inferences can be drawn. The questions are designed to generate sufficient and quality information on road infrastructure on the impact of rate of accidents in the study area using descriptive statistics the descriptive statistics include frequencies, percentages, pie charts and bar charts. The section analysed and explained data collected from road users, road workers, and traffic law enforcement agents. A total number of three thousand seven hundred and six questionnaires (3706) were distributed and used for the purpose of this study which covered the four local government areas in the selected corridor.

Demographic and general information

This section discusses the type of respondent and the socio-economic characteristics of respondents interviewed within the study area. The results obtained are presented as follows.

In the Table 2, 2232 of the respondents which is (60.3%) of the total respondents were male while 1474 of the respondents which is (39.7%) of the respondents were female. This shows that male respondents were more than the female respondents.

Table 2 Gender

Gender		
	Frequency	Percent
Male	2232	60.3
Female	1474	39.7
Total	3706	100.0

Source: Author's field work 2019.

The table 3 indicates that 520(14.1%) of the sampled population were below the ages of 20, about 572 (15.4%) falls between the age of 20 to 24, also 450(12.2%) of the respondents falls between the ages of 25 to 29, likewise 640(17.3%) of the respondents falls between the age of 30 to 34, also about 641(17.3%) of the respondents falls between the ages of 35 to 39, in which 171(4.5%) of the respondents also falls between the ages of 40 to 44, about 170(4.5%) of the respondents falls between the ages of 45 to 49, and likewise 322(9%) of the respondents falls between the age of 50 to 54, while 220(5.8%) falls above the age of 55.

Table 3 Ages of Respondent

Age		
	Frequency	Percent
<20	520	14.1
20-24	572	15.4
25-29	450	12.2
30-34	640	17.3
35-39	641	17.3
40-44	171	4.5
45-49	170	4.5
50-54	322	9.0
55 and above	220	5.8
Total	3706	100.0

Source: Author's field work 2019.

The table 4, shows that 1971 of the respondents which is (53.2%) out of 3706 respondents uses the road very often, 1122 of the respondents which is (30.1%) uses the road often while 613 of the respondents which is (16.7%) uses the road not often.

Table 4 Frequency of Route usage

How often do you travel along the route		
	Frequency	Percent
very often	1971	53.2
Often	1122	30.1
not often	613	16.7
Total	3706	100.0

Source: Authors fieldwork, 2019.

In table 5 it shows the respondents views on the state of road transport infrastructure along the selected corridor. 52 respondents (1.5%) of the 3706 sampled says transport infrastructure in the corridor is Excellent, 1710 about 46.2% agrees that it is Good, 1430 (38.5%) agrees it is fair, 361 which represents 9.6% agrees this infrastructure is poor, while 153 which represent 4.2% agrees it is very poor.

Table 5 state of road infrastructure in Lagos-Abeokuta express way

How can you rate the state of road transport infrastructure in Lagos Abeokuta express way		
	Frequency	Percent
Excellent	52	1.5
Good	1710	46.2
Fair	1430	38.5
Poor	361	9.6
very poor	153	4.2
Total	3706	100

Source: Authors fieldwork, 2019.

The table 6 shows the ranking of the challenges facing road transport infrastructure in Lagos using mean and the relative importance index of the correspondents. This implies the challenges are in the following order from the least to the top; inadequate parking space followed by traffic congestion, environmental pollution, poorly maintained roads, flooding and accident.

Table 6 The Challenges of road infrastructure development in Lagos state (Ranked with Mean).

S/N	THE CHALLENGES OF ROAD INFRASTRUCTURE DEVELOPMENT IN LAGOS STATE.	MEAN	RII	RANK
1.	Mishap (Accident)	1.74	0.4350	1
2.	Submerging Flood	1.62	0.4050	2
3.	Ailing roads	1.61	0.4025	3
4.	Poor environmental quality	1.55	0.3875	4
5.	Traffic overcrowdings	1.51	0.3775	5
6.	Poor parking facility	1.45	0.3625	6

Source: Authors fieldwork, 2019.

The table 7 identifies the availability of road transport infrastructural furniture's along the selected corridor. It shows that pavement was available all through, kerbs were not available only in kola and Ijaiye, culverts were not available at all, drainage were all available whereas traffic light was only available in abule-egba, Road signs were sparsely distributed and available, roundabout was not available at all along the selected corridor, Overhead bridge was only available in 4 locations of the seven sampled, pedestrian bridges was in almost every of the location except for iyanaipaja, walkways were not available in all the location sampled, zebra crossing was not available at all, while bus-stops was available in every of the location in the selected corridor and this shows that 63% observed that is available while 37% is not available. Furthermore, this indicates the road transport infrastructure is not sufficient as some of the locations highlighted above do not have some of the infrastructures necessary for development of the state.

Table 7 identification of road infrastructure along the selected corridor

TRAFFIC FURNITURE	MAJOR LOCATION ALONG THE STUDY AREA						
	Kola	Ijaiye	Abule-Egba	Ile-Epo	Iyana-Ipaja	Iyana-Dopemu	Ikeja
Asphalted road/carriage lanes	O	O	O	O	O	O	O
Kerbs	X	X	O	X	O	O	O
Culverts	X	X	X	x	X	X	X
Drainage	O	O	O	O	O	O	O
Traffic Light/ signals	X	X	O	X	X	X	X
Street-light	O	O	O	O	O	O	O
Road signs	X	X	O	X	O	O	O
Roundabout	X	X	X	X	X	X	X
Overhead-bridge	X	X	O	X	O	O	O
Pedestrian-bridge	O	O	O	O	X	O	O
Walk-ways	X	X	X	O	X	O	O
Zebra crossing	X	X	X	X	X	X	X
Bus-stops	O	O	O	O	O	O	O

Source: authors work, 2019.

Key: O= Available; X= Not Available

The table 8 assesses the condition of the road infrastructural furniture's, which shows that the road carriage/pavement were only bad at ijaiye and iyana-ipaja, kerbs were good in the locations where they were available, the culverts in the study corridor is bad only at kola while others are good, the drainages are only bad at kola and ile-epo, also the traffic light is good in the location where it is available, whereas street lights is evenly distributed between being good and bad, the road signs are only good at abule-egba and ikeja, pedestrian bridges are under construction in some locations that is Kola, ile-epo, iyana-ipaja, iyana-dopemu while it is good in the other places, walkways are only available in ile-epo and ikeja and they are in good condition, Zebra crossing is not available in any of the locations sampled while bus-stops are in bad condition in Kola, ijaiye, abule-egba, ile-epo and good in iyana-ipaja, iyana-dopemu and ikeja and this prove that 68% of the infrastructure are good, 25% of the road infrastructure are Bad, while the remaining 7% is under construction.

Table 8 The condition of infrastructure in the study area.

TRAFFIC FURNITURES	LOCATIONSON SELECTED CORRIDOR						
	Kola location	Ijaiye location	Abule-Egba location	Ile-Epo location	Iyana-Ipaja location	Iyana-Dopemu location	Ikeja location
Asphalted road/Carriage way	Good	Bad	Good	Good	Bad	Good	Good
Kerbs	-	-	Good	Good	Good	Good	Good
Culverts	Bad	Good	Good	Good	Good	Good	Good
Drainage	Bad	Good	Good	Bad	Good	Good	Good
Traffic Light/ signals	-	-	Good	-	-	-	-
Street light	Good	Bad	Good	Good	Bad	Bad	Good
Road signs	-	-	Good	-	Bad	Bad	Good
Roundabout	-	-	-	-	-	-	-
Overhead-bridge	-	-	Good	-	Good	Good	Good
Pedestrian-bridge	U.C	Good	-	U.C	U.C	U.C	Good
Walk-ways	-	-	-	Good	-	-	Good
Zebra crossing	-	-	-	-	-	-	-
Bus-stops	Bad	Bad	Bad	Bad	Good	Good	Good

Key: U.C: Under Construction. N/A:- Not Available (Source: authors field work, 2019)

The plate 1 shows bad drainage at kola, plate 2 shows a pedestrian bridge that is currently undergoing construction, also plate 3 shows pot holes as a result of lack of drainage in that portion of the corridor while plate 4 shows a well paved road at iyana-ipaja.



Plate 1 Bad drainage at Kola along Lagos- Abeokuta Express way (Source: Authors field work, 2019)



Plate 2 pedestrian Bridge under construction at kola bus stop along the route under study (Source: Authors field work, 2019)



Plate 3 well paved road at super along the selected corridor (Source: Authors field work, 2019).



Plate 4 damage pavement along the study area (Source: Authors field work, 2019)

4. SUMMARY OF FINDINGS

This Study attempted to assess road transport infrastructure in Lagos state, Nigeria. For this research to be carried out primary data was used in which questionnaires were designed to elicit information from respondents about their socio economic characteristics as well as issues relating provision, challenges etc. of road transport infrastructures in the study corridor. From the finding it seen be seen that road transport infrastructure in the study area is insufficient and not in a very good condition. This study also revealed that road infrastructure has a great impact on both the economy and trip behavioural pattern in the study area, which has a negative effect on the movement of people and goods along the study area. The nature of road at the study area and the infrastructure is a disadvantage which impedes lot of activities along the study location.

In order to find answers to these questions qualitative research methodology was used in the process of generating data and information related to the topic under the study, capturing people's perception, attitudes about the road infrastructures in Lagos-Abeokuta Expressway. The study affirmed that the road infrastructure along the Lagos- Abeokuta Expressway with inability to meet the demand of its users. The study also found out that the road does not have the adequate standard infrastructure for a road of its type and that the conditions of most of the infrastructures along the road is dilapidated and it also show that the development of

road transport infrastructure in Lagos state is hampered by so many challenges which stands as hindrance to the growth of the road transport sector of the state.

5. CONCLUSION

Road transport infrastructure development is multifaceted and accordingly requires a coordinated methodology for its accomplishment from the investigation of this undertaking; we reasoned that road transportation infrastructure is a major force in the effectiveness and efficient movement of people and goods across any nation.

Generally, the study revealed that road transport infrastructure is important to the success of road transportation as a mode of transport in the country. Road infrastructure plays a crucial role in the socio-economic development of every country in that it ensures smooth movement from one point to another. However, despite this crucial role, road transport infrastructures have been insufficient and not properly maintained especially in most parts of developing countries like Nigeria. It is clear that this study has shown similar situation in Lagos State. The study revealed insufficient and inadequate infrastructure along Lagos-Abeokuta Expressway. There is therefore the need for proper planning and provision of road infrastructure development in Lagos State.

Recommendations

This research work has examined the road transport infrastructure in Lagos state, Nigeria. The study has also shown various components of road transport infrastructure which is necessary for the effectiveness and efficiency of movement of people and goods from one location to another within Lagos state which could directly having an upward effect on the economic and development in other parts of the state.

It is against this that the following recommendations are made with the hope of helping the government on areas of dealing the issues affecting and hindering sustenance of providing necessary road transport infrastructure. Efforts ought to be made by the legislature of Lagos state to evaluate the quantity of existing road transport infrastructures while also setting up state maintenance board to restore them direly.

The government should broaden its aim and objectives on provision of road transport infrastructure through partnerships with the private sectors on the public private partnership (PPP) to rehabilitate existing and construct new road transport infrastructures. There should be provision of alternative mode of transport like the rail system to reduce the burden on the roads in the long run. Government should make use of the tolling systems in some selected places to raise additional funds for maintenance and repair of bad roads. There should be general sensitization of the public on the proper use of the roads by Federal ministry of transport or the ministry of transport in Lagos state, so as to prolong its usage and economic value. Finally, Government should ensure that the road infrastructure distributions in the state are equally distributed.

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Conflicts of Interest: The authors declare no conflict of interest.

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